

Attorney Docket No. 5649-1171

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Ki-Vin Im  
Serial No.: 10/747,803  
Filed: December 29, 2003  
For: METHODS AND APPARATUS FOR DEPOSITING A THIN FILM ON A SUBSTRATE

Confirmation No.: 1856  
Group Art Unit: 1792  
Examiner: Jeffrie Robert Lund

Date: August 27, 2008

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REASONS IN SUPPORT OF APPLICANTS' PRE-APPEAL  
BRIEF REQUEST FOR REVIEW**

Sirs:

This document is submitted in support of the Pre-Appeal Brief Request for Review filed concurrently with a Notice of Appeal in compliance with 37 C.F.R. 41.31 and with the rules set out in the OG of July 12, 2005 for the New Appeal Brief Conference Pilot Program.

No fee or extension of time is believed due for this request other than those submitted with the petition for extension of time filed concurrently herewith. However, if any further fee or extension of time for this request is required, Applicants request that this be considered a petition therefor. The Commissioner is hereby authorized to charge any additional fee, which may be required, or credit any refund, to our Deposit Account No. 50-0220.

**REMARKS**

Applicants hereby request a Pre-Appeal Brief Review (hereinafter "Request") of the claims rejected in the Final Action mailed May 28, 2008 ("Final Action"). Claims 1-3, 35-37, 39 and 40 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,777,300 to Homma (Homma) in view of U.S. Patent No. 5,100,495 to Ohmi (Ohmi). Claim 38 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Homma and Ohmi in further view of U.S. Patent Application No. 2003/0033980 to Campbell (Campbell) and JP Patent 2002-217183 to Sha (Sha). Claims 1-3 and 35-40 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sha in view of Ohmi and Campbell.

Applicants respectfully submit that the cited references teach away from the combination proposed in the Action. Moreover, recitations of the pending claims are not met by the cited references for at least the reasons discussed herein, and therefore, a *prima facie* case of obviousness has not been met. Applicants respectfully request review of the present application by an appeal conference prior to the filing of an appeal brief. In the interest of brevity and without waiving the right to argue additional grounds should this Request be denied, Applicants will discuss certain arguments related to the independent claims.

#### **Independent Claim 1**

Claim 1 recites an apparatus for depositing a thin film, including:

- a) a reaction chamber;
- b) a reaction gas provider to supply a reaction gas and/or inert gas to the reaction chamber;
- c) an oxidant provider to supply a first oxidant and a second oxidant to the reaction chamber; and
- d) an air drain to exhaust gas from the apparatus;
- e) wherein the oxidant provider is operable to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas, and the oxidant provider includes:
  - an oxidant generator to generate the first oxidant;
  - an oxidant container to store the second oxidant;
  - a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator; and
  - a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas.

According to embodiments of the present invention, a mixture of the first and second oxidants is provided to the reaction chamber **60** via the line **62**, and thereafter the first oxidant is provided to the reaction chamber **60** alone (*i.e.*, without the second oxidant) via the line **92** only. In particular embodiments, water vapor and ozone are simultaneously provided to the reaction chamber in an initial step of the deposition process, and then only ozone is provided to the reaction chamber to achieve good step coverage. Such methods may be employed to achieve rapid deposition. *See* Applicants' specification, page 10, lines 24-31.

Applicants submit that Homma and Sha merely propose providing first and second oxidant vapor through independent supply lines to the reaction chamber. Independent supply lines of oxidant vapors are known and discussed on page 3, lines 22-28 of Applicants' specification. In fact, the Action concedes that Homma and Sha do not teach a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator or a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas. However, the Action relies on Ohmi as teaching a known type of vaporizer, and the only apparent reason presented in the Action for the combination is that the combination is allegedly a "simple substitution of one known element for another to obtain predictable results..." See the Action, page 5.

Applicants submit that Ohmi teaches away from a combination with either Homma or Sha, and that not all of the recitations of the claims are met by the cited art for at least the following reasons.

Homma relates to a processing furnace for oxidizing semiconductor devices using an oxidation method for wet oxidation under low pressures. See Abstract and col. 1, lines 5-11. In contrast, Ohmi is directed to a dry etching apparatus with an anhydrous hydrogen fluoride gas generator. See Abstract. The Action apparently takes the position that the anhydrous hydrogen fluoride gas generator 1 of Ohmi is analogous to the oxidant container, the inert gas cylinder 2 is analogous to the oxidant generator, and the processing chamber 3 is analogous to the reaction chamber. See the Action, page 8. However, the gas generator 1 of Ohmi is clearly configured for dry etching and requires a cooler. See, e.g., col. 4, lines 29-58; col. 6, lines 60-63; col. 7, lines 4-7.

Sha relates to a sheet type heat treating device. See Abstract. However, Ohmi discusses repeatedly that a cooler is "essential" for the purpose of cooling the liquefied anhydrous hydrogen fluoride. See col. 4, lines 49-52.

Accordingly, the dry etching apparatus that includes a cooler for cooling the liquefied anhydrous hydrogen fluoride in Ohmi teaches away from a combination with the wet oxidation techniques using a processing furnace discussed Homma or the heat treating device

of Sha.

Moreover, the gas generator 1 and inert gas cylinder 2 of Ohmi do not appear related to oxidants. Therefore, Ohmi also does not disclose "a first supply line to supply the first oxidant directly to the reaction chamber from the oxidant generator" or "a second supply line fluidly connecting the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas" as recited in Claim 1. Applicants submit that there is no apparent reason presented in the Action to modify the vaporizer of Ohmi and the independent supply lines of Homma and Sha to provide the invention recited in Claim 1, *i.e.*, to fluidly connect the oxidant generator to the reaction chamber via the oxidant container to supply the second oxidant to the reaction chamber using the first oxidant as a transfer gas. Accordingly, the invention recited in Claim 1 is not a simple substitution of known elements with no change in their respective functions that yields nothing more than predictable results. M.P.E.P. § 2143.02.

The deficiencies of Homma, Sha and Ohmi are not cured by Campbell, which is cited in the Action on page 6 as merely teaching the use of water and ozone as oxidant gases.

For at least these reasons, Applicants submit that Claim 1 is patentable over the cited art. Claims 2-3 and 35-40 depend from Claim 1 and are patentable at least per the patentability of the claims from which they depend. Accordingly, Applicants request that the rejections under 35 U.S.C. 102/103 be withdrawn.

Attorney Docket No.: 5649-1171  
Application No.: 10/747,803  
Filed: December 29, 2003  
Page 5 of 5

**Conclusion**

For at least the reasons discussed above, Applicants respectfully request a Pre-Appeal Brief Review of the present application and that the rejections be reversed by the Pre-Appeal Brief Review Panel prior to the filing of an Appeal Brief.

Respectfully submitted,



Laura M. Kelley  
Registration No. 48,441

**USPTO Customer No. 20792**  
Myers Bigel Sibley & Sajovec  
Post Office Box 37428  
Raleigh, North Carolina 27627  
Telephone: 919/854-1400  
Facsimile: 919/854-1401

**CERTIFICATION OF TRANSMISSION**

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on August 27, 2008.

Signature: Joyce Paoli  
Joyce Paoli